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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/749,893

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Robert Palifka

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EXAMINER

NGHIEM, MICHAEL P

ART UNIT

PAPER NUMBER

2863

NOTIFICATION DATE

DELIVERY MODE

11/17/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No. 09/749,893	Applicant(s) PALIFKA ET AL.	
	Examiner MICHAEL P. NGHIEM	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10-22-08</u> | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 29,32,33,35,36,38,39,41-43,45,48,50-52,54-58,60,61,63-65,85-87,92-99,110-113,115,121,123,124,126 and 128.

Continuation of Disposition of Claims: Claims rejected are 29,32,33,35,36,38,39,41-43,45,48,50-52,54-58,60,61,63-65,85-87,92-99,110-113,115,121,123,124,126 and 128.

DETAILED ACTION

The Amendment filed on October 22, 2008 has been acknowledged.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 22, 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29, 33, 35, 36, 38, 39, 45, 48, 50, 52, 54-58, 60, 61, 85-87, 92-96, and 110-113, 115-117, and 119-121, 123, 124, 126, and 128 are rejected under 35 U.S.C. 103(a) as

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being unpatentable over Moynihan et al. (US 6,755,511) in view of Baker (US 6,084,618).

Regarding claims 29, 45, and 52, Moynihan et al. discloses an apparatus (ink jet head, Fig. 1) and method (Fig. 1) comprising a piezoelectric element (34, 34') and a first thermoplastic bonding component heat-bonded to a surface the apparatus (column 3, lines 2-3);

wherein the apparatus further comprises an ink channel (33, 33'), the piezoelectric element being positioned to subject ink within the channel to jetting pressure (column 2, lines 31-33), and

electrical contacts arranged for activation of the piezoelectric element (column 2, lines 44-49).

Regarding claims 33, 93, and 120, Moynihan et al. discloses the first bonding component has a thickness between 10 microns and 125 microns (15 microns, column 5, lines 64-67).

Regarding claims 38, 60, and 96, Moynihan et al. discloses a series of channels (Fig. 3).

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Regarding claims 39 and 61, Moynihan et al. discloses each of said channels is covered by a single piezoelectric element (34, 34', Fig. 2).

Regarding claim 45, Moynihan et al. further discloses contacting a first component (10) of an ink jet printing module having a surface (Fig. 1) (column 2, lines 28-32).

Regarding claims 52, 110, and 115, Moynihan et al. further discloses a second bonding component (Figs. 1, 2).

Regarding claims 55, 111, and 116, Moynihan et al. discloses the second bonding component includes a first surface heat-bonded to the surface of the piezoelectric element and a second surface heat-bonded to a surface of an ink jet printing module component (column 3, lines 2-3; Fig. 1).

Regarding claims 56, 112, and 119, Moynihan et al. discloses the second bonding component includes an electrode pattern (electrodes on bonding material, column 2, lines 58-63; column 3, lines 4-8).

Regarding claim 87, Moynihan et al. discloses the surface and the first bonding component are substantially free of liquid adhesive (when they are bonded and cooled).

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Regarding claims 92 and 113, Moynihan et al. discloses the first bonding component has a thickness between 1 micron and 150 microns (15 microns, column 5, lines 64-67).

Regarding claim 117, Moynihan et al. discloses the second component of the ink jet printing module is a piezoelectric element (34, 34', Fig. 1).

Regarding claim 121, Moynihan et al. discloses the second bonding component (30's) has dimensions corresponding to the surface (Fig. 1).

Regarding claims 123, 126, and 128, Moynihan et al. discloses the first bonding component is placed between the ink channel and the orifice plate (14) (Fig. 1; column 2, lines 32-34).

However, Moynihan et al. does not disclose:

- regarding claim 29, 45, and 52, the first thermoplastic bonding component is placed downstream of the ink channel to cover the ink channel and is patterned to include a filter.
- regarding claims 35, 54, and 94, the first thermoplastic bonding component has a thickness between 20 microns and 50 microns.
- regarding claims 36, 58, and 95, the first thermoplastic bonding component includes an adhesive polyimide.

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- regarding claims 48, the first thermoplastic bonding component includes a plurality of openings.
- regarding claim 50, the filter includes a repeating pattern of units having a plurality of openings.
- regarding claims 52, 110, and 115, a second thermoplastic bonding component heat-bonded to the surface.
- regarding claim 85, applying pressure to the surface and the first thermoplastic bonding component.
- regarding claim 86, pressure is applied during heating.
- regarding claim 121, the second thermoplastic bonding component.
- regarding claim 124, patterning the first thermoplastic component using a laser.

Moynihan et al. discloses that a manifold plate (12) and an orifice plate (14) being attached to a collar element (10) (column 2, lines 29-32; Fig. 1). It would be obvious to use a bonding component disclosed by Moynihan et al. (column 3, lines 2-3) for attaching the manifold plate (12) and orifice plate (14) to the collar element (10).

Baker discloses the first thermoplastic bonding component (column 3, lines 34-37) covers the ink channel (Figs. 1, 2) and is patterned to include a filter (32) (Figs. 3), the first thermoplastic bonding component includes an adhesive polyimide (column 3, line 36), the first thermoplastic bonding component includes a plurality of openings (34), the filter includes a repeating pattern of units having a plurality of openings (30, 32, Fig. 2)

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for the purpose of preventing particles from flowing downstream to the nozzles (Fig. 3). Furthermore, Baker discloses the polymer sheet (30) can be used for bonding (column 3, lines 34-37). In light of the first bonding component disclosed by Baker, it would be obvious to provide the second bonding component as a thermoplastic bonding component.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Moynihan et al. with the thermoplastic filter and thermoplastic bonding materials as disclosed by Baker for the purposes of preventing particles from flowing downstream to the nozzles and bonding.

Even though Moynihan et al. as modified by Baker does not disclose applying pressure to the surface and the first thermoplastic bonding component during heating, it is common knowledge to apply pressure to the bonding elements for the purpose of holding the elements in place and heating the thermoplastic material for the purpose of melting it into a bonding liquid.

Even though Moynihan et al. as modified by Baker does not disclose the first thermoplastic bonding component has a thickness between 20 microns and 50 microns, it has been held that discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this particular instance, discovering the

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optimum or workable thickness would result in an optimum and workable thermoplastic filter (32).

Regarding claim 124, even though Moynihan et al. as modified by Baker et al. does not disclose patterning the first thermoplastic component using a laser, it has been held that determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). Baker et al. discloses a patterned thermoplastic component (30, 32, Fig. 2).

Claims 32, 57, 118 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moynihan et al. in view of Baker as applied to claims 29 and 52 above, and further in view of DeYoung et al. (US 4,751,774).

Regarding claims 32 and 57, Moynihan et al. **as modified** by Baker discloses all the claimed limitations as discussed above except the piezoelectric element comprising lead zirconium titanate.

Nevertheless, DeYoung et al. discloses that piezoelectric element comprising lead zirconium titanate (column 5, lines 9-12). DeYoung discloses that lead zirconium titanate is a well-known piezoelectric in the art (column 5, lines 9-11).

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Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Moynihan et al. as modified with lead zirconium titanate as disclosed by DeYoung et al. for the purpose of improving the availability of the piezoelectric material.

Claims 41, 42, 51, 63, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moynihan et al. in view of Baker as applied to claims 29, 45, 50, and 52 above, and further in view of Admitted Prior Art of Fig. 5 (APA).

Regarding claims 41, 51, and 63, Baker further discloses the filter (30) including a repeating pattern of units (32's) having a plurality of openings (34) and a land between each pair of adjacent t units (Fig. 2).

However, Moynihan et al. **as modified** by Baker does not disclose:

- regarding claims 41, 51, and 63, the land between each pair of adjacent units is at least 50 microns.
- regarding claims 42 and 64, the filter has a width of 300 to 495 microns.

Nevertheless, APA discloses a filter (Fig. 5) has a width of 300 to 495 microns (specification, page 7, line 13).

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Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Moynihan et al. as modified with a filter width as disclosed by APA for the purpose of obtaining an optimum and workable filter.

Even though Moynihan et al. as modified by Baker and APA does not explicitly disclose the land between each pair of adjacent units is at least 50 microns, APA discloses that the center-to-center spacing of the filter holes is 45 microns (specification, page 7, lines 11-12). It has been held that discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. In this particular instance, discovering the optimum or workable spacing would result in an optimum and workable thermoplastic filter (32).

Claims 43 and 97-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moynihan et al. in view of Baker as applied to claims 29 and 45 above, and further in view of Kishima (US 6,109,737).

Regarding claims 43 and 97, Moynihan et al. discloses an orifice plate (14).

However, regarding claims 43, 98, and 99, Moynihan et al. does not disclose a protector strip adhered to the orifice plate, wherein either the orifice plate or the protector strip includes a thermoplastic bonding material.

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Nevertheless, Kishima disclose a protector strip (251) adhered to the orifice plate (30) for the purpose of protecting the nozzle from ink adhering around the nozzle (column 35, lines 55-60), wherein either the orifice plate or the protector strip includes a thermoplastic bonding material (column 38, lines 50-55; Figs. 25, 74).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Moynihan et al. as modified with a protector strip adhered to the orifice plate as disclosed by Kishima for the purpose of protecting the nozzle from ink adhering around the nozzle.

Response to Arguments

Applicant's arguments filed October 22, 2008 have been fully considered but they are not persuasive.

With respect to the 35 USC 103 rejections Applicants argue one skilled in the art would not have incorporated Baker's filter into Moynihan's printhead, because Moynihan did not identify the location of an ink reservoir with respect to the ink channel and it would have been impossible for one skilled in the art to know where and how Baker's filter could be placed downstream of an ink reservoir and upstream of ink channels and be used as intended within Moynihan's printhead.

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Examiner's position is that Baker teaches placing the filter downstream of the ink reservoir or channels (column 1, lines 58-60) and upstream of the nozzle plate (36, see Fig. 1) to prevent particles from entering and clogging the orifices (column 1, lines 40-41). Thus, one of ordinary skill in the art would incorporate Baker's filter in Moynihan downstream of the ink channels (22) and upstream of the nozzle plate (14) to prevent the nozzles in the nozzle plate from clogging. Since Baker's filter is a thermoplastic bonding component (see Baker, column 3, lines 34-37), it would be obvious to incorporate the filter in Moynihan between, e.g., the manifold plate (12) and the collar element (10) to attach the two elements together (see Moynihan, Fig. 1).

Applicants further argue that one skilled in the art would not have replaced Moynihan's thin layer of epoxy with Baker's filter because ink does not pass through the layer of epoxy and Baker's filter would not have been useful.

Examiner's position is that Moynihan discloses attaching the manifold plate (12) and the orifice plate (14) to a collar element (10) (column 2, lines 29-32; Fig. 1) in such a way that ink can still be ejected out from the orifice plate (column 2, lines 32-34). It would be obvious to use a bonding component disclosed by Moynihan et al. (column 3, lines 2-3) for attaching the manifold plate (12) and orifice plate (14) to the collar element (10). When attaching the manifold plate (12) and orifice plate (14) to the collar element (10), one of ordinary skill in the art would know to apply the bonding component around the ink channels such that the ink channels would not be blocked by the bonding

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component. Thus, ink can still be ejected out from the orifice plate as disclosed by Moynihan (column 2, lines 32-34).

Applicants further argue that even if one had tried to use Baker's filter in Moynihan's printhead, one would not have placed the filter downstream of Moynihan's ink channel, but rather upstream of the ink channel to prevent particles from entering the channel, for which Baker's filter is intended.

Examiner's position, as discussed above, is that Baker teaches placing the filter downstream of the ink reservoir or channels (column 1, lines 58-60) and upstream of the nozzle plate (36, see Fig. 1) to prevent particles from entering and clogging the orifices (column 1, lines 40-41). Thus, one of ordinary skill in the art would incorporate Baker's filter in Moynihan downstream of the ink channels (22) and upstream of the nozzle plate (14) to prevent the nozzles in the nozzle plate (14) from clogging. Since Baker's filter is a thermoplastic bonding component (see Baker, column 3, lines 34-37), it would be obvious to incorporate the filter in Moynihan, between, e.g., the manifold plate (12) and the collar element (10) to attach the two elements together (see Moynihan, Fig. 1).

Contact Information

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael P. Nghiem/

Primary Examiner, GAU 2863

November 6, 2008